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ABSTRACT

Faculty and administrators at the College of Education at Louisiana State University recognized the need to incorporate technology into all of their programs. Project KITES (Kids Interacting with Technology and Education Students) was developed to give students just beginning their professional education component real experiences with children using technology. Twenty-eight preservice teachers (3 males and 25 females) were paired with 27 fourth-grade students (12 males and 15 females) in a variety of technology-based learning projects. The majority of the preservice teachers had previous computer experience and were somewhat comfortable with computers; most of the fourth grade students were comfortable with computers. The project focused on language and reading skills using technology to support shared-literary experiences and included three activities: (1) a slide show book report using "Kid Pix 2"; (2) a newsletter using "The Writing Center" and the QuickTake camera to digitize pictures into their projects; and (3) a multimedia presentation. Project KITES showed that through immersion in learning environments that include technology, preservice teachers will learn to use technology in their teaching and view technology as a normal part of any classroom. In addition, they will be exposed to good models of teaching using technology and develop their own styles based on these models. Project KITES also provided real experiences to the education students early in their professional preparation. (AEF)

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Project KITES: Kids Interacting with Technology and Education Students

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Project KITES: Kids Interacting with Technology and Education Students

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Abstract

Project KITES paired beginning education students and fourth graders in learning activities using technology. The education students learned to use technology and gained practical experience acting as facilitators and partners in learning. The project has enhanced the pre-service program in many ways far beyond those of technology inclusion. It has also provided the foundation for a new technology-infused teacher education curriculum.

Introduction

Faculty and administrators at the College of Education at Louisiana State University recognized the need to infuse technology into all of their programs. The College had acquired significant resources to support the integration of technology into teacher preparation curricula. This included two full Macintosh teaching labs with accompanying software and multimedia equipment. In addition, classrooms were modified to support class demonstrations and network access. All faculty were provided with computers, which were linked to communications networks and file servers with instructional software. Two full-time technicians and a secretary were employed to maintain and support the operation.

The next step after the creation of the technology environment was to proceed with the faculty development and curricular integration that was envisioned to accompany the facilities development. The College had a requirement that some students take an introductory course in educational technology. Most students took this course in their senior year, and thus learned to use computers as personal tools but got little practical experience using them in instruction.

Project KITES Developed

In the fall of 1994, a new pilot project, Project KITES, Kids Interacting with Technology and Education Students, was initiated. The project was designed to provide students just beginning their professional education component with real experiences with kids using technology. Preservice teachers were paired with fourth-grade students in a variety of technology-based learning projects. The pre-service students were to work as facilitators of the learning experience and were to develop an awareness of teaching methodologies using technology at the same time.

The philosophy behind the project was simply to instill the concept of technology as part of the normal classroom environment. This was to be done through actual class experiences rather than dedicated courses or demonstrations. The plan was to follow the practice established in this pilot project of including technology-based clinical experiences in future courses so that the education students entered the job market fully prepared to integrate themselves into the computer infested classrooms in the community.

Although the focus of the project was technology, the project was designed to enhance the teacher education curriculum in many ways beyond technology infusion. The education students would get real experiences working with children and learn methodologies for communications with children. Moreover, they were being prepared to function as partners in learning. Often, they would learn new technological skills from the exploration with the children and develop an appreciation for environments where they did not have to maintain superiority.

The elementary students were also to benefit from the project. They too would learn new ways to express themselves with technology. This would add to a base foundation already developed through prior experiences at their school. The children would also reap the benefits of a learning partner who cared about them and listened to them. They would have the benefits of personal attention to their own needs and learning styles and positive reinforcement about their schoolwork. They were to be treated as full partners in this technology-based learning experience.

Background on Integrating Technology into Teacher Education

As computers rapidly swept into classrooms, the mandates were clear that technology was fundamental to the education of all students and therefore all teachers. National initiatives clearly elaborated the role of technology in pre-college education in all subject areas. Most professional education societies were actively involved in producing standards for technology use with various subject areas (Donovan, 1994). Finally in 1994, the prestigious teacher accreditation agency, NCATE, the National Council of Accreditation of Teacher Education, formally recognized the role of technology in all teacher preparation programs. NCATE issued its revolutionary revision of its unit standards guidelines to include indicators that reflect technology infusion in the entire professional education unit and all programs (Thomas, 1994). This includes standards for facilities, support, equipment, software, faculty development, and curriculum integration. Thus, many colleges of education are now moving quickly to modify or adapt their programs to meet these new defacto national standards.

Professional education units have traditionally tried a variety of methods to integrate technology into their operations. One common approach is to dedicate significant energy and funds into acquiring equipment and resources with the expectation that they will then be used to their fullest potential. Another is to require that all students in teacher preparation programs take a required foundations in educational technology course and hope that it will result in them naturally using technology well in their classrooms. A third is to undertake massive faculty development programs and assume that curricular revisions to include technology would naturally follow. Current research now clearly illustrates than a planned approach involving the entire professional unit, including faculty development, facilities, curricular revisions, and technical support is needed to fully achieve technology integration within programs.

A current common approach is to develop technological personal productivity skills in students, often starting with their entry into the program or university. This can include techniques such as issuing Internet accounts to students (Bishop-Clark, 1993) and requiring certain electronic communications with professors or classmates and even maintaining specialized electronic bulletin boards for program participants (Wiebe, 1993). It can also include required word processing of papers and electronic journal writing (Anders, 1994) as well as technology-based research and the like. While this often produces students who are technologically or information literate, it does not in itself produce students skilled in the methodologies of using technology in the classroom.

The approach piloted by Project KITES was a unique departure from the traditional methods used in the past. It involved real experiences with children. This approach is reflected in the findings of Wetzel (1993) that "teacher educator majors need to use computers in K-12 schools and see teachers using them." The basic principles of learning by doing and promoting active rather than passive learning apply equally to education students as they do to children. The education students were not necessarily taught all of the technology skills first, but were to learn these while learning to work with kids. They were getting experience in teamwork and technology. This was first to happen in the very controlled setting of this pilot project and to be expanded in other courses to a point where the students were able to prepare technology-based learning units and incorporate technology into a variety of learning situations.

This project in itself is not envisioned as the entire means of curricular integration. It will be combined with other approaches to produce an environment that mixes technology and learning and teacher education in realistic and meaningful ways.

Profile of Education Course and Student Population

The university student population involved in this project consisted of 28 students enrolled in EDCI 2030, Teaching, Schooling, and Society, at Louisiana State University. These students were all enrolled in a new five-year teacher preparation program. In this program, students fulfill many of their general education requirements in the freshman and sophomore years. In their junior year, they begin their professional education training. All of the LSU students in this study were college juniors.

First Professional Education Course

EDCI 2030 is the first education course in the elementary education program. Typically the course consisted of lecture,

discussion, and classroom observations at field sites. There was no formal contact with pre-college students except through passive observation. It was a rare occurrence that students happened upon a classroom actively using technology. This new approach, mixing real children, technology, and active participation into the formula marked a dramatic departure from the traditional "standard" for this course.

Prior Computing Experience

The college student population consisted of 3 males and 25 females. At the beginning of the course, a survey was conducted to determine the amount of prior experience the students had using computers, their attitudes about using computers, and their views about the role of computers and technology in education. This class had a substantial amount of prior experience using computers. Twenty-four of them (86% of the group) had used computers for word processing and games. Many had used graphics packages and other personal tools. Twenty-one students (75%) had used the computers in the campus library to search for holdings. Only four (14%) had used computers in a work setting. Less than half, eleven (39%), owned a computer.

Students were asked to indicate their level of comfort using computers. Two (7%) responded that they were very comfortable. The majority of the students, 18 (64%), selected one of the two somewhat comfortable levels. The remaining 7 (25%) did not feel comfortable using computers. Thus there were some students most enthusiastic about the proposed mixing of technology into the class and a few with the usual cases of computer anxiety that can be found in such groups.

The bulk of their formal computing instruction had come from pre-college experiences. All but two (93%) had taken a computing course in high school, including 24 (86%) who had taken state mandated computer literacy courses. Only 5 (18%) had taken a college computing course. The investigators were quite surprised to find this level of prior experience and relative comfort around technology.

The students had some experience, therefore, using the computer as a personal tool. A few had used instructional software in middle school or high school. Students were asked to identify situations in college where they had seen computers used as part of instruction, other than in computing specialty classes. Only two reported seeing such use, both demonstrations of fractals in mathematics classes. Thus their pre-college computing foundations were not being reinforced at all in their college coursework. Almost all viewed technology as important in their professional education careers.

Collaboration with University Laboratory School

The project involved interactions with technology and a fourth-grade class at the University Laboratory School. The Lab School is a unit of the LSU College of Education, with a complete K-12 school occupying a site on campus. Often, pilot projects such as this one, start with experiences at the Lab School, due to the proximity of the school and the diverse student population of the school.

Fourth-Grade Class Selected

The fourth-grade class selected to participate in the project was ideal for the project. The teacher was new to the school and had acquired few resources for the class. Hers was one of the few classrooms without a computer, although it did have a weekly scheduled time in one of the school's computer labs. The school itself was not overly technology-rich, but had integrated a fair amount of technology into its classes. The students in this class had all had some computing experiences in second and third grade, particularly keyboarding exercises. The teacher had come from an environment where she had computers in her classroom and was an avid user of computers herself. Thus, she was eager to use technology in her classroom and actually sought out colleagues within the College of Education to work with her and her students.

Project Arrangements

The three principle collaborators in the project, the Lab School instructor, the EDCI 2030 professor, and an educational technology faculty member decided that the project would focus on language and reading skills using technology to support shared-literary experiences. An inspection of the Lab School facilities determined that the computer labs at the school were already occupied during the EDCI course time and that they could not run the types of software envisioned. It was decided that the fourth graders would walk to the labs within the College of Education, about three blocks away. Arrangements were made for the education students to assemble at the Lab School and escort the fourth graders to and from their school. Ten joint sessions were planned during the two-hour lab block, including time for moving the elementary students to and from their school and an hour of hands-on laboratory time.

Breaking the Ice with Student Interviews

The first joint activity was to have the two student populations meet each other at the Laboratory School classroom. Two icebreaker activities were planned: Construction of kite nametags and interviews between the student groups. The project directors prepared packets with colorful descriptions of Project KITES and two interview forms. Special attention was given to producing materials that were at appropriate reading levels for the fourth graders and that would make the fourth graders feel that they were important participants in the project.

The LSU students gathered with some trepidation outside the Lab School for this encounter. One student who was late to arrive exclaimed, "We are not really going in, are we?" This experience was a real lesson in the reality of what their next three years of preparation was all about.

Inside the classroom, each LSU student sat by one of the fourth graders. This child would be his/her partner for the first project. The first pairing, therefore was almost random. Since there were only 3 male LSU students and 12 of the 27 Lab School students were male, they were not paired by gender. Partners were changed for each of the next two projects.

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Once involved in the activity of decorating their kite nametags, the group came alive. There was a wonderful rapport from the start. Expressions on faces became more animated and excited as partners bonded with each other.

Survey of Lab School Students

To help them get background on their students and to provide some of the data for this study, the LSU students interviewed the fourth graders. They were instructed to conduct the survey as conversation rather than a test and thus get the children to talk about themselves. To help the fourth graders get to know their partners, a shorter fun survey was devised for them to conduct as well.

The fourth grade class consisted of 15 females and 12 males. Only two had spent less than three years at the Lab School. All had used computers in second and third grade, mostly for keyboarding and playing games. The children reported using computers outside of class as well, for playing games and for writing papers. Twenty three (85%) of the students had computers in their homes. An interesting trend is that of three of the four students without a computer at home were female. All but two checked that they like working with computers a lot. The other two fell into the "It's OK" category. No fourth grade student was overly negative about using computers.

The fourth graders were enthusiastic computer users. Unlike the college students, most had ready access to computers at home and virtually all were comfortable with computers. They also all seemed to be reading books at least at the fourth grade level and some were reading much more sophisticated books. They talked freely to their college partners and seemed to relish working with them.

Reactions to First Encounter

A critical component of the education course was the follow-up activities to the interactions with the students. The education students completed weekly writing assignments about their experiences and their concerns as well as suggestions for improvement. Class discussions were held to review the lab experience, elaborate methodology or principles observed or learned, and to address areas of concern.

The college students were exhilarated by their first experience with live students and also a bit concerned. Most wrote about fears and anxiety prior to entering the school for the first time. They were also somewhat intimidated by the fourth grade students. Many commented on how smart the kids were and how much the kids already knew about computers. This group of children did not match their recollections of their own fourth grade classes or particularly fit their mental images of young students. They also expressed the feeling that this was not a realistic setting. They sensed that this was a special group, not typical of the normal class.

Perhaps the biggest concerns were about the books the children were reading. Several commented that the books were inappropriate and contained violence or offensive material. These prospective teachers wondered if they should try to influence their fourth grade partners' choice of books or interfere in other ways. Thus, there was a need to define their roles in the project including limitations as well as expectations.

College Students First Laboratory Activity

Prior to the first lab activity with the elementary students, the college students spent one two-hour session in the lab. During this session, they learned to turn on the computers, practiced using the mouse, and worked with some of the beginning software that the elementary students would use. This included exploring two packages, *Kid Pix 2* and *Kid Works 2*.

Despite their proclamations of comfort around computers, many of the students expressed concerns about using the technology in the laboratory. One sat at her workstation proclaiming "I hate computers. I hate this. I am not going to do this." before they had even turned the computers on. Once they actually took the first step and became involved with the engaging software, most of their prior reservations vanished. Typical comments during class and during the follow-up discussions were about amazement that such exciting software was available for kids and that using the computers was so easy and fun! These students were totally turned onto the potential of using technology with kids by this simple encounter. The most dramatic change in attitude came when the student who had been so vocal in opposition to the project asked the professor where she could buy the software! Thus, armed with a little experience, these students were ready to move onto the joint sessions with the elementary students.

This activity was also a lesson in teaching with technology. There were only 22 lab stations for the 28 college students, thus they had to share and take turns. They quickly learned to help each other and also discovered that the professors did not have all of the answers! They saw that despite the best plans, things can go wrong. They also learned that you can achieve a lot with limited resources and energetic leadership.

Activities Planned

The project directors planned three projects for the student partners to undertake. The first was a slide show book report using *Kid Pix 2*. The second was a newsletter using *The Writing Center* and the QuickTake camera to digitize pictures into their projects. The final project was a multimedia presentation. The first joint lab activity will be discussed in this paper.

They also recognized that the real goals of the project were not to see how many projects they could complete, but rather to have positive experiences using technology. Thus planned activities were refined and adjusted during the project depending on the progress of the group as well as the amount of intrusion of other factors, such as rain or technical problems.

Slide Show Book Reports

The first joint activity was a shared literary experience to produce slide show book reports using *Kid Pix 2*. Part of the first meeting at the Lab School was used to prepare for this activity. The fourth graders told their college partners about the books they were reading. It was decided that the college students would each read the books that their fourth grade partners had selected. This was a real eye-opener to a new generation of children's literature for the college students.

At the same time, the investigators were preparing materials to support the lab activity. Following the model set out for the class, the EDCI professor read a book by one of the favorite authors of the current fourth graders. The project directors then created their own slide show as a model for the group activity. This included illustrating the graphics of the software and well as the animated movies and sounds that could be incorporated.

The slide shows were to use the graphics already available with the software as much as possible and enhance the slides with text, sound, and animation. A few used scanners or digitized pictures at this early stage. Photographs of each team were prepared for slides of the production team for the end of each slide show.

Laboratory Experiences

Ten joint lab sessions were held. For each, the college students escorted the fourth graders to and from their school and worked together as teams on assigned projects. They facilitated the learning as much as possible, but allowed the children to gain technological skills. Thus, the college students undertook some of the more involved tasks such as retrieving the software from the network and saving projects. They also had to learn to relinquish the controls and let the elementary students explore the software, run into problems, and find their way out.

The size of the group was a problem for several reasons. Just finding chairs to accommodate the group and placing them in a lab that normally held 22 stations already tightly packed together was a major effort. The size of the two groups combined far exceeded the number of people that should reasonably be placed in the lab and made movement and concentration in the lab difficult. Thus, lab experiences were hectic, particularly in the early phases of the project.

Fortunately there was a small five-station lab next door to the main facility. Five college students volunteered that they felt quite comfortable working independently with their partners. Thus, these ten members of the group moved to the secondary site. This group tended to be the most creative and really explored and tested the limits of the software.

Project Outcomes

Since the project is still in ongoing, concrete statistical measurements of outcomes have not yet been developed. Investigators already can clearly see that many of their goals have been met and can also identify other outcomes not perceived prior to the project. These include the following:

1. Providing experience with real children to education students early in their studies;
2. Instilling the concept that technology is a standard tool in elementary education;
3. Using active learning to teach methodologies for incorporating technology in classroom activities;
4. Overcoming anxieties about using technology through a non-threatening, supportive atmosphere;
5. Preparing prospective teachers to be facilitators of learning and collaborators in team situations;
6. Exposing prospective teachers to elementary curricula and content areas;
7. Motivating new education students about their chosen field of study;
8. Fostering cooperation with the lab school and the local community;
9. Enhancing the learning of elementary students through the use of technology; and
10. Providing a beginning model for integration of technology into teacher preparation programs.

Don't Forget Dewey

The project caused an immediate stir within the College of Education. Many faculty members noticed the invasion of the children into the building and wandered into the lab to see what was going on. Quickly, others within the College asked how they could do similar things with their classes or at least expose them to the benefits of using technology in instruction. Teachers in the field at the Lab Schools and other sites began requesting to have student volunteers work with them and their students.

This one project could easily have consumed the entire course. It was only a matter of time before the elders of the department began to scrutinize what was going on and became concerned that the project was being done at the expense of the traditional educational foundations that were normally the cornerstone of the course. For example, one professor called to be sure that the students were reading enough of the works of the educational philosopher John Dewey.

Adding this activity to an already busy course was difficult. The professor took great care to retain the traditional core as well as to enhance it. Students still did reflective writing and observations. They visited other classes using technology. Due to their experiences in this project, their observations about the uses of the technology and techniques of the teachers were much more insightful. They also completed assigned readings that were much more meaningful since they were now experiencing Dewey rather than simply reading him.

Conclusions

Project KITES enhanced the education of prospective teachers through the use of technology. It is easy to observe young students learning naturally when placed in well-constructed learning environments. Project KITES showed that the same

philosophy can be used on education students. Through immersion in learning environments that include technology they will learn to use technology in their teaching and view technology as a normal part of any classroom. At the same time, they will be exposed to good models of teaching using technology and develop their own styles and practices based on these models.

Project KITES also provided real experiences to the education students early in their professional preparation. During this project, these students underwent significant growth as educators and experienced great emotional turmoil in the process. Many had to come to grips with the reality of their own future plans. Most emerged with a new strength of conviction about their careers.

Project KITES is just one model of infusing technology into teacher preparation programs. It is only one part of a planned progression of activities that are be needed to achieve total integration of technology in teacher education. At least in this case, it may prove to be a real catalyst and pave the way for a great marriage between technology and education at one university.

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